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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/612,313

07/02/2003

Dennis A. Kramer

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EXAMINER

HANDAL, KAITLY V

ART UNIT

PAPER NUMBER

1764

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
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3 MONTHS

04/02/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No. 10/612,313	Applicant(s) KRAMER ET AL.	
	Examiner Kaity Handal	Art Unit 1764	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 22 January 2007.
 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) _____ is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
 5) ☐ Claim(s) _____ is/are allowed.
 6) ☒ Claim(s) 1-19 is/are rejected.
 7) ☐ Claim(s) _____ is/are objected to.
 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
 1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 9, 12, 14, 17, and 19 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skala et al. (US 2003/0134166 A1) in view of Labinov et al. (US 2002/0160238 A1).

With respect to claims 9 and 14, Skala teaches a fuel reforming system (fig. 2A), comprising: and a compressor (64) with a pressurized air outlet (page 3, paragraph [0019], lines 13-14) (illustrated by arrow from compressor (64) extending to check valve (74)), and a fuel reformer (Fig. 2D, 120).

Skala fails to teach a turbocharger having a turbine with a reformat gas inlet and a reformat gas outlet fluidly coupled to the reformat gas inlet of the turbine. Labinov teaches a turbocharger having a turbine (expander) (fig. 6, 120) with a reformat gas inlet (from reformer (102) as illustrated), and a reformat gas outlet fluidly coupled to the reformat gas inlet of the turbine (expander) (120) (as illustrated) in order to produce a greater specific power and provide lower overall system cost compared to other power systems (page 3, paragraph [0036]); and wherein said turbine (120) is upstream an air compressor (106) in order to utilize the

energy produced by the expansion of the synthesis gas in the turbine (120) to drive the air compressor (106) (page 5, paragraph [0063], lines 6-8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have the reformat stream in Skala's fuel processor pass through a turbine prior to passing to a fuel cell, as taught by Labinov, in order to produce a greater specific power and provide lower overall system cost compared to other power systems and utilize the energy produced by the expansion of the synthesis gas in the turbine to drive the air compressor of Skala.

With respect to claims 12 and 17, Labinov further teaches wherein the system further comprises an electrical generator having an input coupled to an output of the turbine (expander) (120) (page 5, paragraph [0063], lines 6-9).

With respect to claims 19, Labinov further teaches wherein the expander is a turbine (page 5, paragraph [0061], lines 8-10).

3. Claims 10 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skala et al. (US 2003/0134166 A1) in view of Labinov et al. (US 2002/0160238 A1), as applied to claims 9 and 14 above, and further in view of Surma (US 6,630,113 B1).

With respect to claims 10 and 15, Skala as modified discloses all claim limitations as set forth above but fails to show wherein the turbine (expander) has a reformat gas outlet fluidly coupled to an intake of an internal combustion engine. Surma teaches a waste treatment system which comprises partial oxidation reformer (col. 62, lines 18-22), a compressor (fig. 1, 46), and an expander/turbine (52) where the latter has a gas outlet fluidly coupled to an intake of an internal combustion engine in order to generate electricity (col. 3, lines 32-35).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an internal combustion engine fluidly connected to the gas outlet of the expander/turbine in Skala's modified apparatus, as taught by Surma, in order to generate electricity.

4. Claims 11, 13, 16 and 18 are rejected under 35 U.S.C. 103(a) as being unpatentable over Skala et al. (US 2003/0134166 A1) in view of Labinov et al. (US 2002/0160238 A1), as applied to claims 9 and 14 above, and further in view of Bromberg et al. (US 2002/0194835 A1).

With respect to claims 11 and 16, Skala as modified discloses all claim limitations as set forth above but fails to show wherein the expander has a reformat gas outlet fluidly coupled to an emission abatement device. Bromberg teaches an emission abatement system which comprises a plasma fuel converter (fig. 5, 12), providing hydrogen to expander/turbine (26) which has a gas outlet (illustrated) fluidly coupled to an emission abatement device/absorber catalyst (32) which is adapted to treat NO_x in order to trap NO_x present in the exhaust (page 2, paragraph [0017], lines 1-8).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include an emission abatement device coupled to the expander/turbine gas outlet in Skala's modified apparatus, as taught by Bromberg, in order to trap NO_x present in the exhaust.

With respect to claims 13 and 18, Skala as modified discloses all claim limitations as set forth above but fails to show wherein the fuel reformer comprises a plasma fuel reformer. Bromberg teaches wherein fuel reformer comprises a plasma fuel reformer/converter (12) in order to readily transform fuel into hydrogen gas and have an instantaneous turn-on and response in a very compact unit (page 3, paragraph [0028], lines 4-6).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to include a plasma fuel reformer in Skala's modified apparatus, as taught by Bromberg, in order to readily transform fuel into hydrogen gas and have an instantaneous turn-on and response in a very compact unit.

Response to Arguments

Prior Art Rejection

Applicant's arguments filed 1/22/2007 have been fully considered but they are not persuasive.

Applicant argues on Page 1 of the Remarks that:

Firstly, Applicants would like to note that in comparing the current official action with the previous one, the Examiner has merely taken the references she relied upon in the previous office action, Labinov in view of Skala, and rearranged them such that Skala is the base reference and Labinov is used in support. However, in the current official action, the Examiner notes that Applicants' previous arguments were persuasive, yet provides no indication as to why she believes proper motivation now exists that did not previously, even when relying upon the exact same references as before. Secondly, based upon a thorough reading of both Skala and Labinov, it is clear that the references cannot be combined because the systems taught by each simply will not work with one another..."

Examiner respectfully agrees that the references were applied differently in the Office Action mailed 10/23/2006. However, the examiner respectfully disagrees that the references cannot be combined. As set forth in the rejection above, the fuel processor system of Skala et al. demonstrates having an air compressor feeding air into a fuel processor (as illustrated in figure 2A), and the power system of Labinov demonstrates turning a turbine connected to an air compressor by making use of the high pressure of the reformat stream and supplying air to a fuel cell (as illustrated in Fig. 6). Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to provide a turbine in the reformat stream of Skala, as taught by Labinov, in order to drive Skala's air compressor and provide air to another part of the apparatus, which in Skala's case air is fed into the fuel processor.

Applicant further argues on Page 3 of the Remarks that:

... "the Examiner has failed to reconcile her placement of the turbine with the particular control strategy disclosed in Skala for supplying air to the fuel processor 54...."

... "A turbine disposed between the fuel processor 54 and the fuel cell 52 on either side of the valve 100 would not be continuously receiving a sufficient flow of processed fuel for rotation. Thus, the compressor would not supply air to the fuel processor 54 when the valve 100 is closed as is specifically required in Skala."

Examiner respectfully disagrees. The apparatus is capable of being run continuously, thereby, having valves and a control mechanism in Skala's apparatus would not render the system of Skala in view of Labinov inoperable. In the instances that the flow valve (100) in Skala is closed, the turbine would not be receiving any reformat stream obviously. However, when the valve is open, then the reformat stream, having high pressure, would be capable of rotating the blades in the turbine.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Kaity Handal whose telephone number is (571) 272-8520. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

KH

3/26/2007

GLENN A. CALDAROLA
PRIMARY EXAMINER
GROUP 1100

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